

### **REMARKS**

This is a full and timely response to the non-final Office Action of March 13, 2006.

Reexamination, reconsideration, and allowance of the application and all presently pending claims are respectfully requested.

Upon entry of this First Response, claims 1-6 and 8-25 are pending in this application. The specification and claims 1-6, 8, 9, 12, 15, 16, and 18 are directly amended herein. Further, claim 7 is canceled, and claims 22-25 are newly added. It is believed that the foregoing amendments add no new matter to the present application.

### **Response to §112 Rejections**

Claims 7 and 8 presently stand rejected under 35 U.S.C. §112, second paragraph, as allegedly failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claim 7 has been canceled herein mooted the rejection of this claim. Further, the Office Action indicates that claim 8 has been rejected under 35 U.S.C. §112, second paragraph, by virtue of its dependence on claim 7. However, Applicants observe that claim 8 depends from claim 1, not claim 7. Thus, it appears that the 35 U.S.C. §112, second paragraph, rejection of claim 8 is improper.

### **Response to §102 and §103 Rejections**

A proper rejection of a claim under 35 U.S.C. §102 requires that a single prior art reference disclose each element of the claim. See, e.g., *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983). In order for a claim to be properly rejected under 35

U.S.C. §103, the combined teachings of the prior art references must suggest all features of the claimed invention to one of ordinary skill in the art. See, e.g., *In Re Dow Chemical Co.*, 837 F.2d 469, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988), and *In re Keller*, 642 F.2d 413, 208 U.S.P.Q. 871, 881 (C.C.P.A. 1981).

### **Claim 1**

Claim 1 presently stands rejected under 35 U.S.C. §102 as allegedly being anticipated by *Sawyers* (U.S. Patent No. 4,828,387). Claim 1, as amended, reads as follows:

1. An optical calibration system, comprising:  
a diffraction grating comprising a diffractive surface;  
an input optical arrangement located to illuminate the diffractive surface of the diffraction grating with incident light at an angle of incidence at which absorption of the incident light at a resonance wavelength generates surface plasmons; and  
an output optical arrangement located to receive the incident light specularly reflected by the diffractive surface of the diffraction grating as reflected light, the reflected light including an absorption line at the resonance wavelength;  
a light source; and  
***an optical calibration apparatus operable to provide a control signal for calibrating the light source based on the absorption line,***  
***in which the light source is operable to control a wavelength of light generated by the light source based on the control signal.*** (Emphasis added).

Applicants respectfully assert that *Sawyers* fails to disclose at least the features of claim 1 highlighted above. Therefore, the 35 U.S.C. §102 rejection of pending claim 1 is improper.

In this regard, *Sawyers* appears to disclose an optical system that analyzes light reflected from a sample to determine whether a ligand is present in the sample. See column 1, lines 26-31. In particular, *Sawyers* apparently discloses a system that reflects light from a diffraction grating to generate an absorption notch in the light. See column 1, lines 10-12. The light is also apparently

reflected from a sample and analyzed to determine whether such reflection caused a shift in the absorption notch. If the absorption notch is indeed shifted, then the presence of a ligand is detected. Otherwise, a determination is made that the sample does not contain the ligand. See column 3, lines 7-21. Accordingly, the optical system disclosed by *Sawyers* appears to detect a shift in an absorption notch of light reflected from a sample in order to detect the presence of a ligand in the sample. However, *Sawyers* fails to disclose any light source that is calibrated based on the absorption notch. Thus, *Sawyers* fails to disclose at least “an optical calibration apparatus operable to provide a control signal for calibrating the light source based on the absorption line, in which the light source is operable to control a wavelength of light generated by the light source based on the control signal,” as described by claim 1.

For at least the above reasons, Applicants respectfully assert that *Sawyers* fails to disclose each feature of pending claim 1. Therefore, the 35 U.S.C. §102 rejection of claim 1 should be withdrawn.

#### **Claims 2-6 and 22-24**

Claim 2 presently stands rejected in the Office Action under 35 U.S.C. §102 as allegedly being anticipated by *Sawyers*. In addition, claims 3-6 presently stand rejected in the Office Action under 35 U.S.C. §103 as allegedly being unpatentable over *Sawyers* in view of *Hoppe* (U.S. Patent No. 6,570,657), and claims 22-24 are newly added via the amendments set forth herein. Applicants submit that the pending dependent claims 2-6 and 22-24 contain all features of their respective independent claim 1. Since claim 1 should be allowed, as argued above, pending dependent claims

2-6 and 22-24 should be allowed as a matter of law for at least this reason. *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

### **Claim 15**

Claim 15 presently stands rejected under 35 U.S.C. §103 as allegedly being unpatentable over *Karube* (U.S. Patent Application Publication No. 2003/0113231) in view of *Sawyers*. Claim 15, as amended, reads as follows:

15. A calibration method for calibrating the wavelength of light subject to calibration, the method comprising:  
providing a diffraction grating comprising a diffractive surface;  
specularly reflecting incident light off the diffractive surface of the diffraction grating light at an angle of incidence at which absorption of the incident light at a resonance wavelength generates surface plasmons;  
receiving the light reflected by the diffractive surface as reflected light, the reflected light having an absorption line at the resonance wavelength; and  
***calibrating the wavelength of the light subject to calibration using the absorption line in the reflected light as a wavelength reference, in which the calibrating comprises setting the wavelength of the light subject to calibration.***  
(Emphasis added).

Applicants respectfully assert that the alleged combination of *Karube* and *Sawyers* fails to teach at least the features of claim 15 highlighted above. Therefore, the 35 U.S.C. §103 rejection of pending claim 15 is improper.

In this regard, it is alleged in the Office Action that:

“*Karube et al* shows calibrating a surface plasmon system by providing a reference area on the plasmon generating surface which is not influenced by the material being measured, and thus allows the absorption wavelength of the plasmons generated in that reference area to serve as a wavelength standard, see figure 9, which shows the direct association of the absorption line at the reference surface and the wavelength.”

However, there is nothing in either *Karube* or *Sawyers* to suggest that a wavelength of light subject to calibration should be “set” by the alleged “calibrating.” In particular, it appears that the alleged “calibrating” is performed to estimate the dielectric constants of a baseline surface and a sample surface to enable estimation of various chemical states of such surfaces. See Paragraphs [0003]-[0005] and [0014]-[0016] of *Karube*. There is nothing in *Karube* or *Sawyers* to suggest that the wavelength of any light should be “set” based on such “calibrating.” Thus, the alleged combination fails to suggest “in which the calibrating comprises setting the wavelength of the light subject to calibration,” as described by claim 15.

For at least the above reasons, Applicants respectfully assert that the cited art fails to suggest each feature of pending claim 15. Therefore, the 35 U.S.C. §103 rejection of claim 15 should be withdrawn.

#### **Claim 17**

Claim 17 presently stands rejected in the Office Action under 35 U.S.C. §103 as allegedly being unpatentable over *Karube* in view of *Sawyers*. Applicants submit that the pending dependent claim 17 contains all features of its independent claim 15. Since claim 15 should be allowed, as argued above, pending dependent claim 17 should be allowed as a matter of law for at least this reason. *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

### **Claim 25**

Claim 25 has been newly added via the amendments set forth herein. Claim 25 presently reads as follows:

25. A calibration method, the method comprising:  
providing a diffraction grating comprising a diffractive surface;  
specularly reflecting incident light off the diffractive surface of the diffraction grating at a first angle of incidence at which absorption of the incident light at a first resonance wavelength generates surface plasmons;  
receiving the light reflected by the diffractive surface at the first angle of incidence as first reflected light, the first reflected light having an absorption line at the first resonance wavelength;  
calibrating a wavelength of light subject to calibration using the absorption line in the first reflected light as a wavelength reference;  
specularly reflecting incident light off the diffractive surface of the diffraction grating at a second angle of incidence at which absorption of the incident light at a second resonance wavelength generates surface plasmons;  
receiving the light reflected by the diffractive surface at the second angle of incidence as second reflected light, the second reflected light including an absorption line at the second resonance wavelength; and  
calibrating a wavelength of light subject to calibration using the absorption line in the second reflected light as a wavelength reference.

Applicants respectfully assert that the cited art fails to disclose or suggest each of the above features of claim 25. Thus, claim 25 is allowable.

### **Allowable Subject Matter**

Claims 9-14, 16, and 18-23 have been indicated as allowable by the outstanding Office Action if such claims are rewritten to include the limitations of their respective base claims. Accordingly, pending claims 9 and 12 have been amended herein to include the features of their respective base claim 1, and Applicants respectfully request that the objections to these claims be

withdrawn. Further, claims 10, 11, 13, and 14 depend from and include the features of a respective one of the allowable claims 9 and 12. Thus, claims 10, 11, 13, and 14 are allowable as a matter of law. *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

Further, claims 16 and 18-23 each depend from claim 15. For at least the reasons set forth hereinabove, Applicants submit that claim 15 is allowable, and claims 16 and 18-23 are, therefore, allowable as a matter of law in their present form. *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

In addition, the Office Action indicates that claim 7 would be allowable if the rejection of this claim under 35 U.S.C. §112 is overcome. Moreover, Applicants submit that new claim 25 includes features similar to canceled claim 7, and Applicants respectfully request that claim 25 be allowed in the next paper mailed from the Patent Office.


### **CONCLUSION**

Applicants respectfully request that all outstanding objections and rejections be withdrawn and that this application and all presently pending claims be allowed to issue. If the Examiner has any questions or comments regarding Applicants' response, the Examiner is encouraged to telephone Applicants' undersigned counsel.

Respectfully submitted,

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